

**XIV World Congress of Psychiatry**  
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**Purpose**

Neurocognitive impairments are commonly considered a core feature of Schizophrenia (Harvey & Keefe, 1997; Saykin et al, 1991) . The aim of this study was to compare the performance between schizophrenic patients and healthy matched controls in different cognitive measures derived from the Portuguese adaptation of the Wechsler Adult Intelligence Scale 3rd Edition (WAIS-III).

**Methods**

▪ **Participants:** 37 Portuguese people diagnosed with Schizophrenia (Age Mean = 41.9, SD = 8.5; 87% males) and 37 healthy controls (Age Mean = 41.3, SD = 8.5; 87% males), matched as possible for the following categories: age, education and geographic region. Controls were part of a broader study designed to adapt the WAIS-III to Portugal. There wasn't found significant differences between controls and schizophrenic patients regarding age (T=0,288; p=0,774). In what concerns geographic region, all schizophrenic patients and 86,5% of controls were from the north-western part of Portugal, and 13,5% of the controls were from the central and southern parts of Portugal, nevertheless these differences were no significant (p=0,054; Fisher's Exact Test).

▪ **Instruments:** All subjects were assessed with a neurocognitive battery which comprised both verbal (Arithmetic, Vocabulary, Digit Span, and Letter-Number Sequencing) and performance subtests (Picture Completion, Digit Symbol – Coding, and Symbol Search) from the Portuguese version of the WAIS-III:

**Vocabulary:** A series of orally and visually presented words that the examinee orally defines, assessing the degree to which one has learned, been able to comprehend and verbally express vocabulary.

**Arithmetic:** A series of arithmetic problems that the examinee solves mentally and responds to orally, assessing concentration while manipulating mental mathematical problems.

**Digit span:** A series of orally presented number sequences that the examinee repeats verbatim for Digits Forward and in reverse for Digits Backward, assessing transient working memory and attention/concentration.

**Letter-Number Sequencing:** A series of orally presented sequences of letters and numbers that the examinee simultaneously tracks and orally repeats, with the numbers in ascending order and the letters in alphabetical order, assessing attention and executive working memory.

**Picture Arrangement:** A series of pictures presented in a mixed-up order that the examinee rearranges into a logical story sequence, assessing logical/sequential reasoning and social insight.

**Symbol Search:** A series of paired groups, each pair consisting of a target group and search group. The examinee indicates, by marking the appropriate box, whether either target symbol appears in the search group, allowing the assessment of visual perception and processing speed.

**Digit Symbol-Coding:** A series of numbers, each of which is paired with its own corresponding hieroglyphic-like symbol. Using a key, the examinee writes the symbol corresponding to its number, assessing visual-motor coordination and processing speed.

All raw scores were corrected for age group to produce scaled scores. Processing Speed and Working Memory indices were calculated combining the scores of Digit Symbol – Coding and Symbol Search subtests (Processing Speed Index) and of Arithmetic, Digit Span, and Letter-Number Sequencing subtests (Working Memory Index).

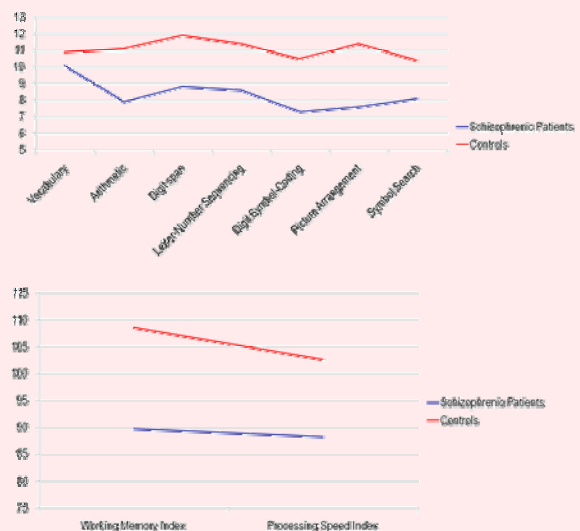
▪ **Data Analysis:** Independent sample t-test analysis were computed in the SPSS 15.0 in order to determine the differences between groups on cognitive subtests and indices from the WAIS-III.

**Results and Conclusions**

Comparison between schizophrenic patients and healthy controls on cognitive subtests and indices

Subtest/Index	Schizophrenic Patients		Controls		T	p
	Mean	SD	Mean	SD		
Vocabulary	10.1	3.7	10.9	3.6	-0.947	0.347
Arithmetic	7.9	3.0	11.1	3.1	-4.523	0.000**
Digit span	8.8	2.7	11.9	3.8	-4.096	0.000**
Letter-Number Sequencing	8.6	2.8	11.4	3.2	-3.980	0.000**
Digit Symbol-Coding	7.3	3.3	10.5	3.1	-4.301	0.000**
Picture Arrangement	7.6	2.5	11.4	3.2	-5.699	0.000**
Symbol Search	8.1	3.1	10.4	3.2	-3.068	0.003**
Working Memory Index	89.7	15.1	108.6	18.3	-4.857	0.000**
Processing Speed Index	88.2	15.9	102.6	15.4	-3.976	0.000**

\*p < 0.05 \*\* p < 0.01



Patients performed significantly worse than controls in most of the subtests. The only exception occurred with the Vocabulary subtest, in which no significant differences were found. The subtests in which schizophrenic patients showed the most pronounced deficits were Picture Completion, Arithmetic and Digit Symbol – Coding.

The results confirm the presence of generalized cognitive impairments in Schizophrenia. These deficits appear to be more prominent in performance tests than in verbal tests. The inexistence of an impairment in the Vocabulary subtest should be carefully examined in further investigations, although in the research project "Measurement and Treatment Research to Improve Cognition in Schizophrenia" the dimension Verbal Comprehension was excluded from their neuropsychological battery because it was considered to be extremely resistant to change.

**Bibliography**

Harvey, P. D. & Keefe, R. S. (1997) Cognitive impairment in schizophrenia and implications of atypical neuroleptic treatment. *CNS Spectrums*, 2, 1-11.; Saykin, A. J., Gur, R. C., Gur, R. E., et al (1991) Neuropsychological function in schizophrenia. Selective impairment in memory and learning. *Archives of General Psychiatry*, 48, 618 -624.